

# DART SERVICE INSTRUCTION

## TO AMEND INSTALLATION INSTRUCTIONS IIN-D119-646 REV. D AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D119-646 REV. 3

REF FAA STC: SR02024SE  
REF EASA STC: 10040294

### 1.0 PURPOSE:

The purpose of this Dart Service Instructions is to add D119-646-313/-314 Skidtube Protector Kit to make the D119-646-011/-012/-041/-111/-112/-141/-211/-212/-241 Skidtube Kits and the D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 Float Skidtube Kits compatible with the 109-0812-68-105 Hoist Structural Provision Kit and the 109-0816-18-301 Rappelling Kit. The D119-646-313 Skidtube Protector, LH replaces the 109-B710-05-201 kit and the D119-646-314 Skidtube Protector, RH replaces the 109-B710-05-202 kit.

### 2.0 D119-646-011/-012/-041/-111/-112/-141 STANDARD SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 2.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 2.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x  $\phi 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.4 Countersink 4x 5/16" holes to  $\phi 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 2.5 Repeat steps 2.2 to 2.4 for the opposite side of the skidtube.
- 2.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 2.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

**D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.**

D	REVISED DSI TO INCLUDE SKIDTUBE MODIFICATION INSTRUCTIONS FOR FLOAT SKIDTUBES D119-013/-014/-043/-113/-114/-143/-243 CHG 006 AND SUBSEQUENT AND D119-646-213/-214 CHG 007 AND SUBSEQUENT, REF NCR17-6586	MW	18.08.24
C	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR FLOAT SKIDTUBES D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243, REF CIR 17-101	VS	17.06.27
B	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR SKIDTUBE ASSY D119-646-011/-012/-111/-112/-041/-141/-241 CHG 005 & SUBSEQUENT AND SKIDTUBE ASSY D119-646-211/-212 CHG 006 & SUBSEQUENT. ADDED NAS1149D0316J WASHERS TO BOM.	WK	17.02.16
A	NEW ISSUE	RF	15.12.10
REV.	DESCRIPTION	BY	DATE
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MFG. APPR.	N/A	DSI 9734	SHEET 1 OF 15
APPROVED	NO	TITLE	SCALE
DE APPR.	DS- <del>11</del>	SKIDTUBE PROTECTOR KIT	NTS
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### 3.0 D119-646-211/-212/-241 STANDARD SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-211/212 Skidtube at CHG 005 and prior, and D119-646-241 at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 3.1 Temporarily remove D3849-043 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 3.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x  $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.4 Countersink 4x 5/16" holes to  $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 3.5 Repeat steps 3.2 to 3.4 for the opposite side of the skidtube.
- 3.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 3.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-211/-212 Skidtube at CHG 006 and subsequent and D119-646-241 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

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#### 4.0 D119-646-013/-014/-043/-113/-114/-143 FLOAT SKIDTUBE MODIFICATION:

**D** The following instructions are for modifying the D119-646-013/-014/-043/-113/-114/-143 Float Skidtube at CHG 005 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 4.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 4.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x  $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 4.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 4.4 Countersink 4x 5/16" holes to  $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 4.5 Repeat steps 4.2 to 4.4 for the opposite side of the skidtube.
- 4.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 4.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

**D** D119-646-013/-014/-043/-113/-114/-143 Skidtube at CHG 006 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

#### 5.0 D119-646-213/-214/-243 FLOAT SKIDTUBE MODIFICATION:

**D** The following instructions are for modifying the D119-646-213/-214 Float Skidtube at CHG 006 and prior, and D119-646-243 Float Skidtube at CHG 005 and prior (with the exception of Float Skid tubes S/N S089679, S094961, S106182, S106198 which do not need to be modified), to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 5.1 Temporarily remove D3849-045 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 5.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x  $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 5.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 5.4 Countersink 4x 5/16" holes to  $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 5.5 Repeat steps 5.2 to 5.4 for the opposite side of the skidtube.
- 5.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 5.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

**D** D119-646-213/-214 Float Skidtube at CHG 007 and subsequent, D119-646-243 Float Skidtube at CHG 006 and subsequent and D119-646-243 Float Skid tubes S/N S089679, S094961, S106182, S106198, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

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## **6.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-011/-012/-041/-111/-112/-141:**

- 6.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 6.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 6.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.7 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.8 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.9 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

**NOTE:** Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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## 7.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-211/-212/-241:

- 7.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 7.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-211/-212 Skidtube at CHG 006 and subsequent, and D119-646-241 Skidtube at CHG 005 and subsequent, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 7.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.7 Reinstall the D3849-043 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 7.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

**NOTE:** Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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## **8.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-013/-014/-043/-113/-114/-143:**

- 8.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 8.2 Trim the D5369-1/-2 Cable Guard per Figure 7.
- 8.3 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-013/-014/-043/-113/-114/-143 Float Skidtube, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 8.4 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.5 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.6 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.7 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 2x AN3-47A bolts, 2x D5374-1 Bushings, 2x D4506-3 Washers, 4x NAS1149D0332J washers, 2x MS21042L3 nuts as shown in Figure 7 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 2x AN3-47A bolts, 2x D5374-1 Bushings, 2x D4506-3 Washers, 4x NAS1149D0332J washers, 2x MS21042L3 nuts as shown in Figure 7, Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

**NOTE:** Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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## **9.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-213/-214/-243:**

- 9.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 9.2 Trim the D5369-1/-2 Cable Guard per Figure 8.
- 9.3 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-213/-214/243 Float Skidtube, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 9.4 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.5 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.6 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.7 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.8 Reinstall the D3849-045 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 9.9 Install D5369-2 Cable Guard on the RH side of the aircraft using 2x AN3-50A bolts, 2x D5374-1 Bushings, 2x D3904-1 Washers, 2x MS21042L3 nuts as shown in Figure 8 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.10 Install D5369-1 Cable Guard on the LH side of the aircraft using 2x AN3-50A bolts, 2x D5374-1 Bushings, 2x D3904-1 Washers, 2x MS21042L3 nuts as shown in Figure 8 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.11 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

**NOTE:** Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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**10.0 PARTS LIST:**

Qty. -313	Qty. -314	PART NUMBER	DESCRIPTION
X		D119-646-313	SKIDTUBE PROTECTOR, LH
	X	D119-646-314	SKIDTUBE PROTECTOR, RH
6	6	D3904-1	WASHER
6	6	D4506-3	WASHER
1		D5369-1	CABLE GUARD, LH
	1	D5369-2	CABLE GUARD, RH
1		D5371-1	HOOK, LH
	1	D5371-2	HOOK, RH
1	1	D5372-1	PLUG
6	6	D5374-1	BUSHING
8	8	D5374-3	BUSHING
1	1	D5376-1	DRILLING JIG
4	4	AN3-45A	BOLT
6	6	AN3-47A	BOLT
6	6	AN3-50A	BOLT
18	18	NAS1149D0332J	WASHER
4	4	NAS1149D0316J	WASHER
10	10	MS21042L3	NUT

**11.0 WEIGHT AND BALANCE**

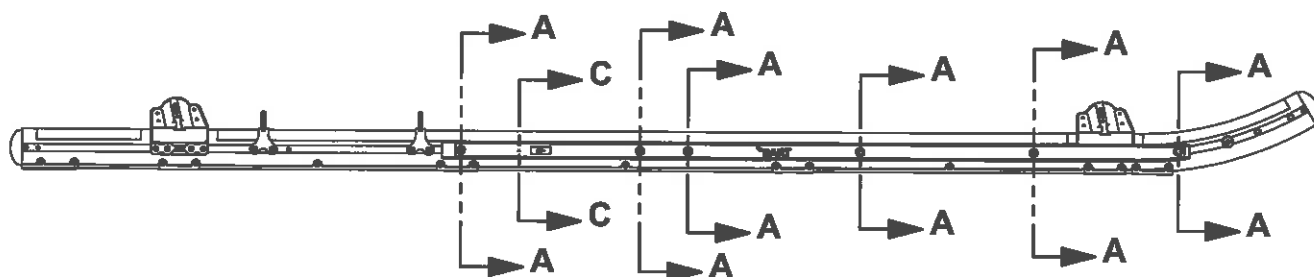
The following weight and balance changes are applicable:

Installation	Weight	LONGITUDINAL		LATERAL	
		Arm	Moment	Arm	Moment
D119-646-313 SKIDTUBE PROTECTOR, LH ON STANDARD SKIDTUBE	4.3 lb 1.95 kg	108.1 in 2.74 m	465 in-lb 5.3 kg-m	-43.4 in -1.1 m	-187 in-lb -2.2 kg-m
D119-646-314 SKIDTUBE PROTECTOR, RH ON STANDARD SKIDTUBE	4.3 lb 1.95 kg	108.1 in 2.74 m	465 in-lb 5.3 kg-m	43.4 in 1.1 m	187 in-lb 2.2 kg-m
D119-646-313 SKIDTUBE PROTECTOR, LH ON FLOAT SKIDTUBE	1.6 lb 0.72 kg	133.3 in 3.38 m	213 in-lb 2.4 kg-m	-43.4 in -1.1 in	-69 in-lb -0.8 kg-in
D119-646-314 SKIDTUBE PROTECTOR, RH ON FLOAT SKIDTUBE	1.6 lb 0.72 kg	133.3 in 3.38 m	213 in-lb 2.4 kg-m	43.4 in 1.1 in	69 in-lb 0.8 kg-in

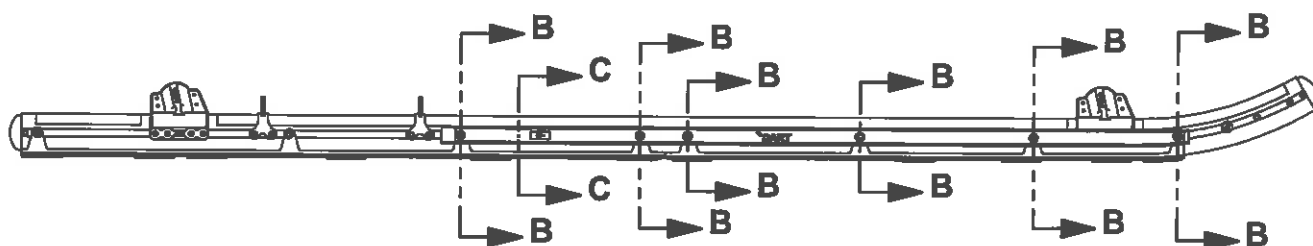
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CHECKED	ZF	DRAWING NO.	REV. D
MFG. APPR.	N/A	<b>DSI 9734</b>	SHEET 8 OF 15
APPROVED	NO	TITLE	SCALE
DE APPR.	DS	<b>SKIDTUBE PROTECTOR KIT</b>	NTS
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**FIGURE 1: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)**  
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))  
 (SHOWN INSTALLED ON D119-646-011/-012/-111/-112 SKIDTUBES)



**FIGURE 2: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)**  
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))  
 (SHOWN INSTALLED ON D119-646-211/-212 SKIDTUBES)

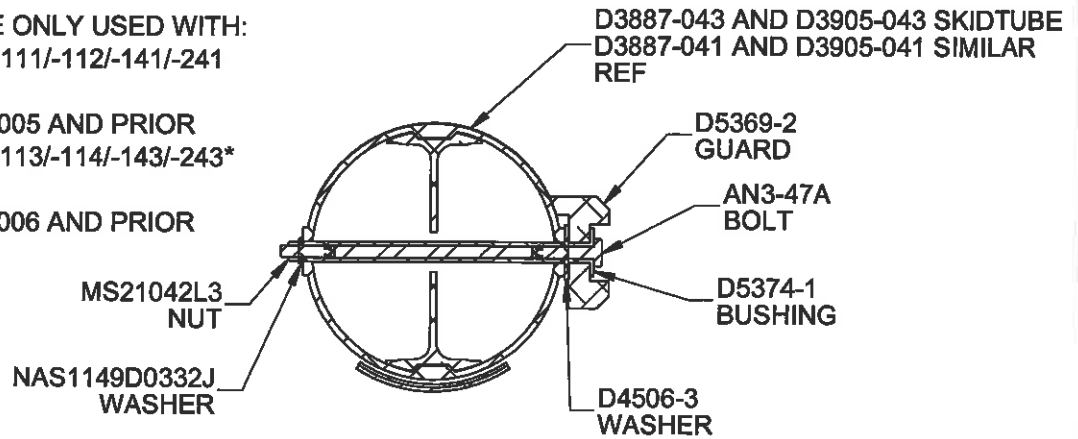
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MFG. APPR.	N/A	DSI 9734	SHEET 9 OF 15
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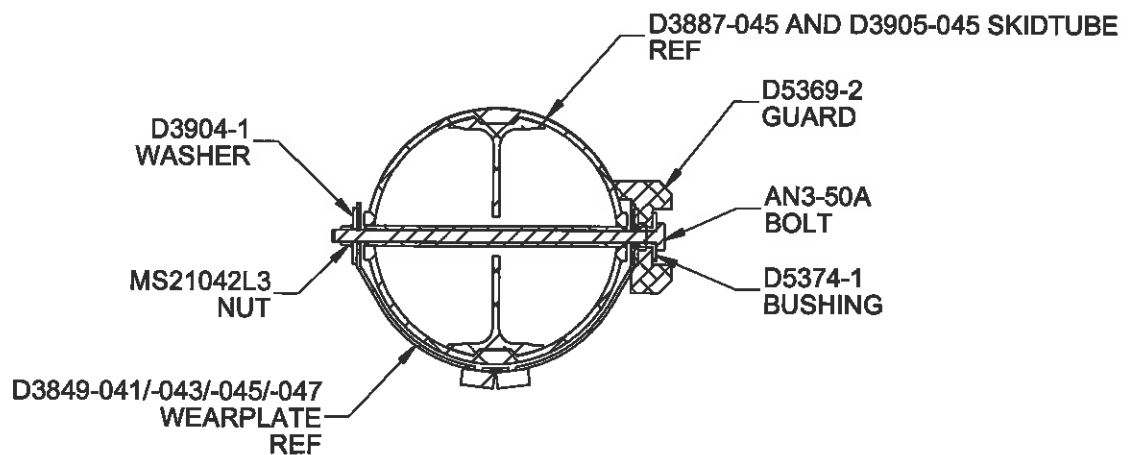
# **NOTES:**

- 1) D5374-3 BUSHINGS ARE ONLY USED WITH:
  - D119-646-011/-012/-041/-111/-112/-141/-241  
CHG 004 AND PRIOR
  - D119-646-211/-212 CHG 005 AND PRIOR
  - D119-646-013/-014/-043/-113/-114/-143/-243\*  
CHG 005 AND PRIOR
  - D119-646-213/-214 CHG 006 AND PRIOR

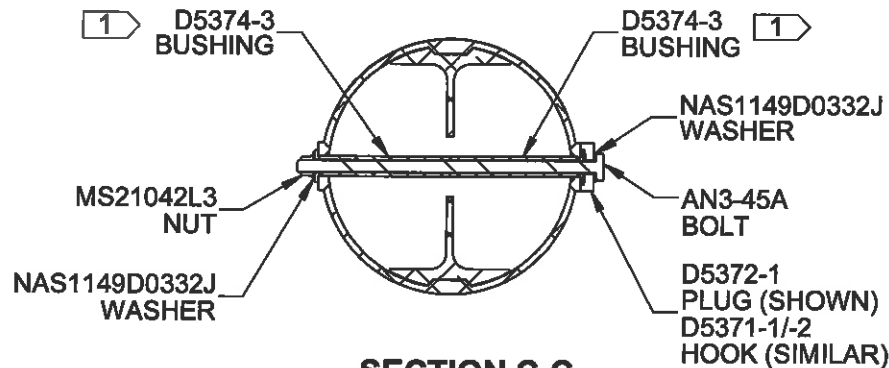
**D**



**SECTION A-A**



**SECTION B-B**



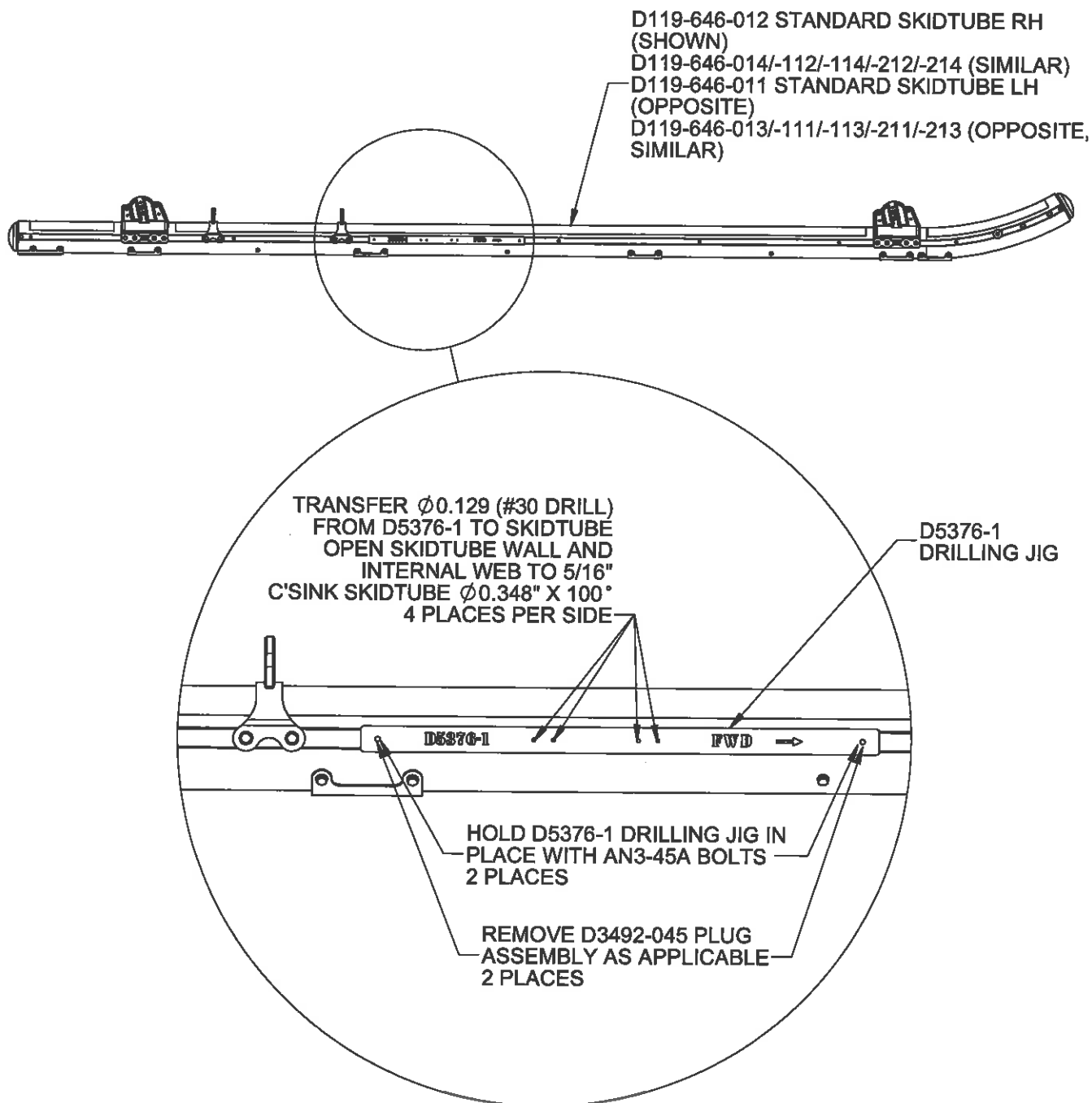
**SECTION C-C**

(D5369-2 NOT SHOWN FOR CLARITY)

**D** \* D119-646-243 S/N S089679, S094961, S106182, S106198 have been modified at the factory and do not require bushings. They should be installed as CHG 006 Skid tubes.

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### DETAIL D

### FIGURE 3: USING D5376-1 DRILLING JIG

D5376-1 DRILLING JIG IS ONLY USED WITH SKIDTUBE ASSEMBLIES:

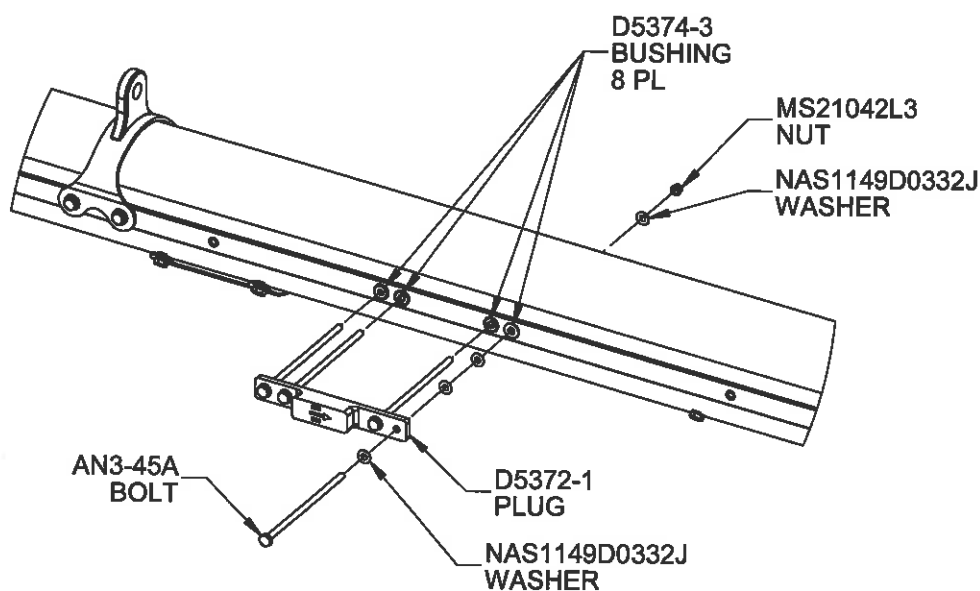
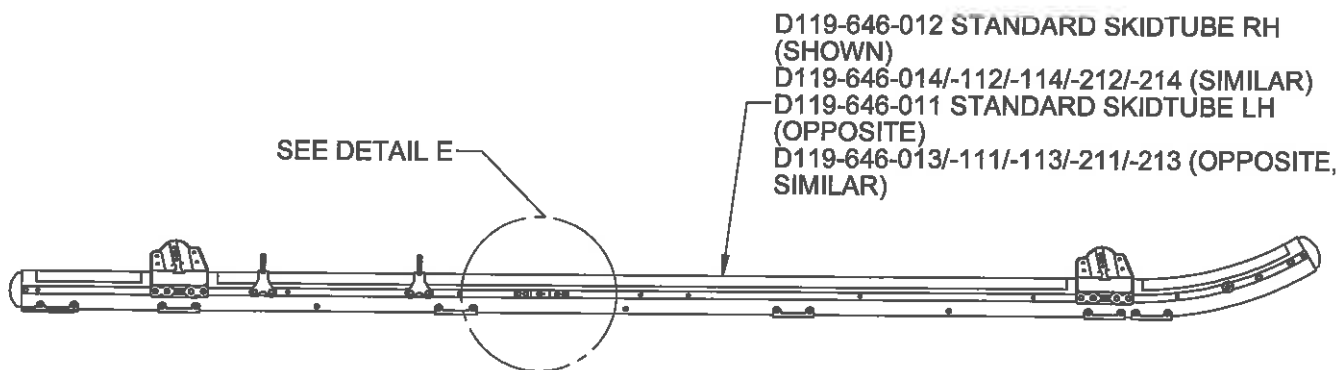
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR
- D119-646-013/-014/-043/-113/-114/-143/-243\* CHG 005 AND PRIOR
- D119-646-213/-214 CHG 006 AND PRIOR



\* D119-646-243 S/N S089679, S094961, S106182, S106198 have been modified at the factory and do not require bushings. They should be installed as CHG 006 Skid tubes.

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MFG. APPR.	N/A	<b>DSI 9734</b>	SHEET 11 OF 15
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### DETAIL E

### FIGURE 4: D5372-1 PLUG INSTALLATION

D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:

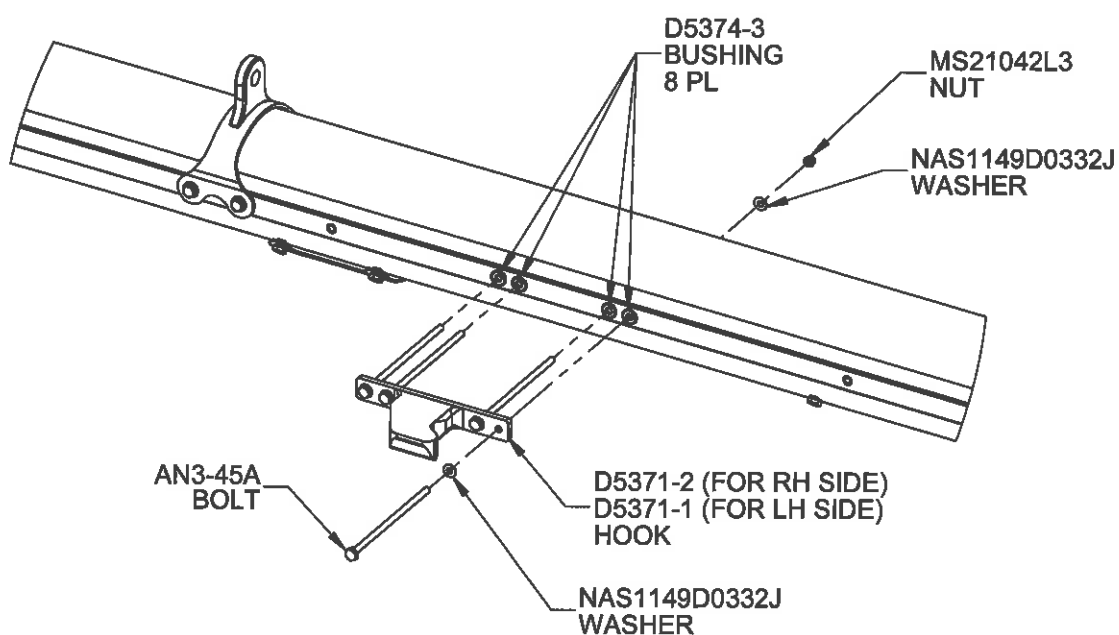
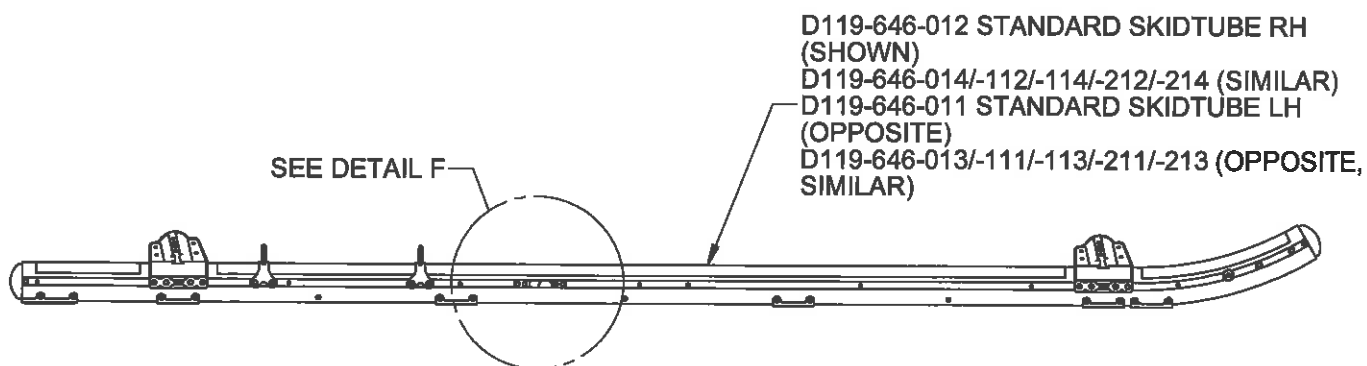
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR
- D119-646-013/-014/-043/-113/-114/-143/-243\* CHG 005 AND PRIOR
- D119-646-213/-214 CHG 006 AND PRIOR



\* D119-646-243 S/N S089679, S094961, S106182, S106198 have been modified at the factory and do not require bushings. They should be installed as CHG 006 Skid tubes.

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MFG. APPR.	N/A	<b>DSI 9734</b>	SHEET 12 OF 15
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### DETAIL F

### FIGURE 5: D5371-1/-2 HOOK INSTALLATION

D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR
- D119-646-013/-014/-043/-113/-114/-143/-243\* CHG 005 AND PRIOR
- D119-646-213/-214 CHG 006 AND PRIOR



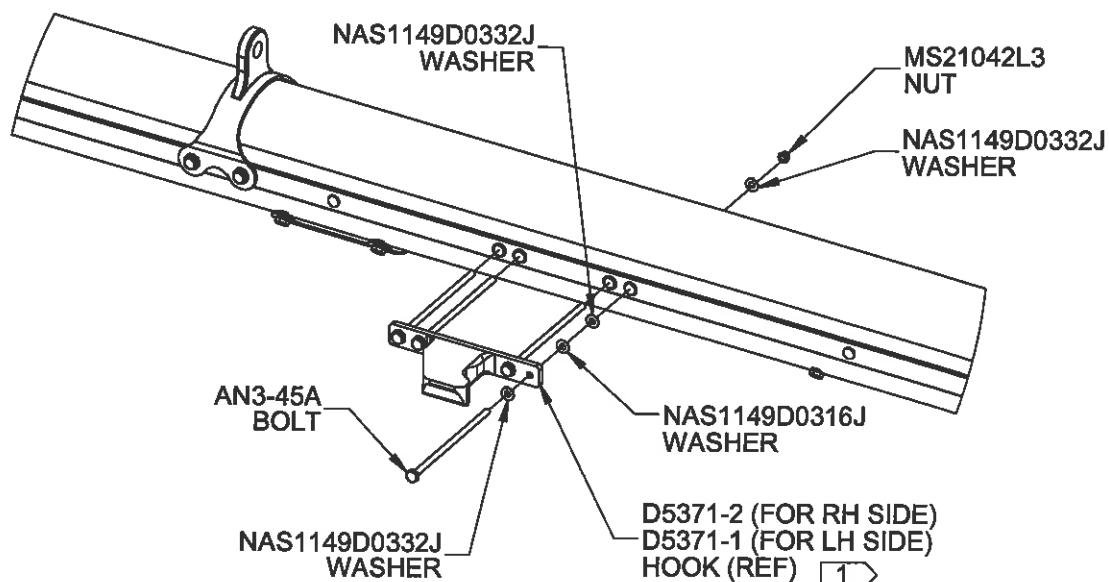
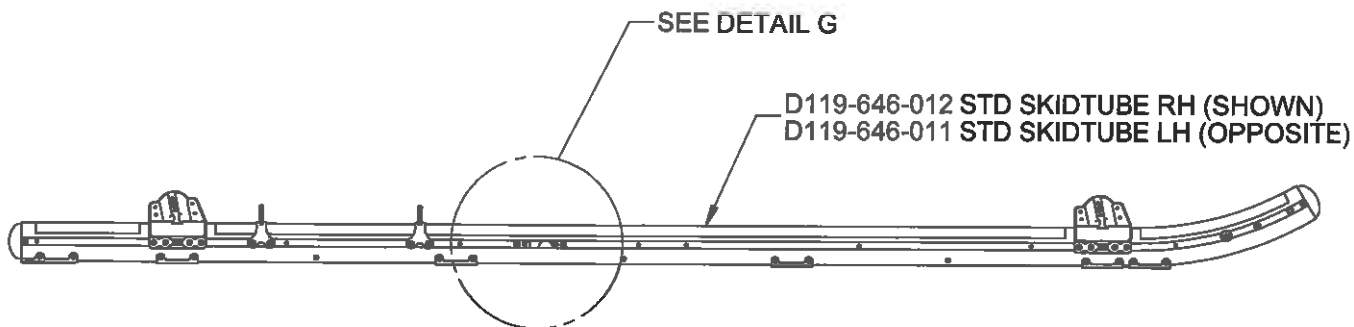
\* D119-646-243 S/N S089679, S094961, S106182, S106198 have been modified at the factory and do not require bushings. They should be installed as CHG 006 Skidtubes.

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MFG. APPR.	N/A	<b>DSI 9734</b>	SHEET 13 OF 15
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# **NOTES:**

1) D5371-1/2 HOOK ASSEMBLY SHOWN, D5372-1 PLUG ASSEMBLY SIMILAR.



## **DETAIL G**

### **FIGURE 6: HOOK & PLUG INSTALLATION**

NAS1149D0316J and NAS1149D0332J WASHER BUILDUP IS ONLY USED WITH SKIDTUBE ASSEMBLIES:

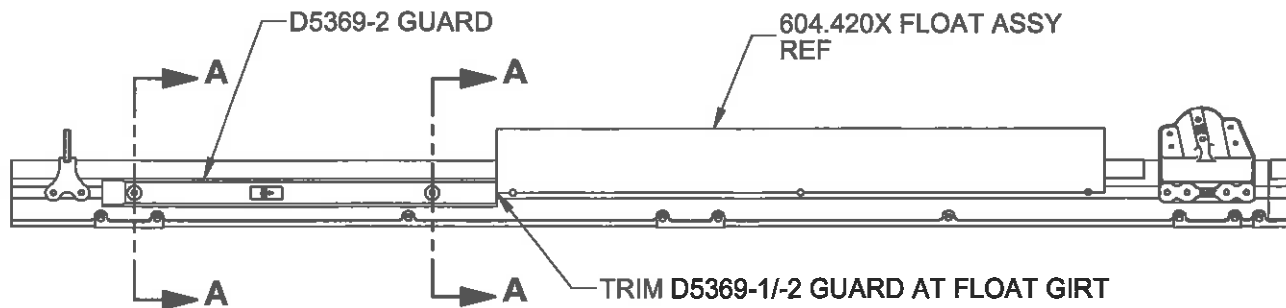
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 005 AND SUBSEQUENT
- D119-646-211/-212 CHG 006 AND SUBSEQUENT
- D119-646-013/-014/-043/-113/-114/-143/-243\* CHG 006 AND SUBSEQUENT
- D119-646-213/-214 CHG 007 AND SUBSEQUENT



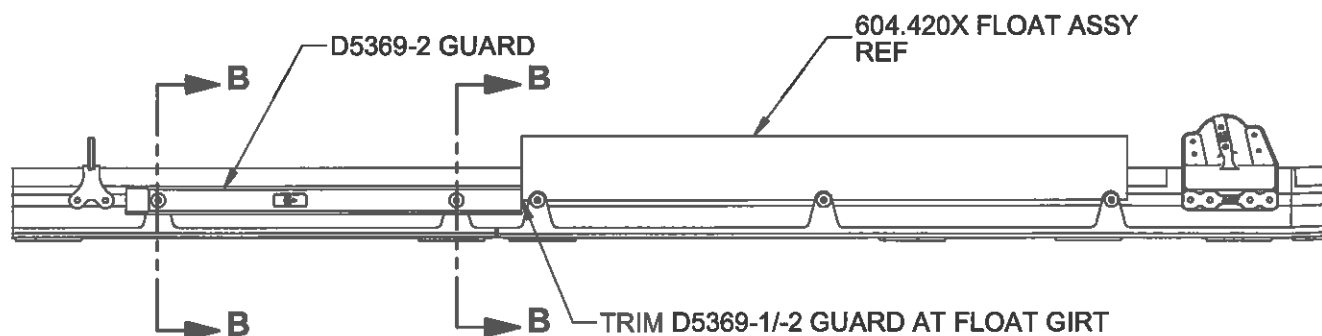
\* D119-646-243 S/N S089679, S094961, S106182, S106198 have been modified at the factory and do not require bushings. They should be installed as CHG 006 Skid tubes.

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**FIGURE 7: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)**  
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))  
 (SHOWN INSTALLED ON D119-646-013/-014/-113/-114 SKIDTUBES)



**FIGURE 8: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)**  
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))  
 (SHOWN INSTALLED ON D119-646-213/-214 SKIDTUBES)

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MFG. APPR.	N/A		SHEET 15 OF 15
APPROVED	NO	TITLE <b>SKIDTUBE PROTECTOR KIT</b>	SCALE
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